REMARKS/ARGUMENTS

By Office action dated January 5, 2005, the Examiner has rejected claims 1-7 under 35 U.S.C. §103 as being obvious over U.S. Patent No. 5,852,477 ("Limberg") in view of U.S. Patent No. 6,057,876 ("Waight"). The Examiner has further indicated that claims 8 and 9 are directed to allowable subject matter. In response, claim 1 has been amended and claims 2 and 3 have been cancelled. Thus, claims 1 and 4-9 remain in the application.

Claim 1 as originally filed and as amended recites a zero intermediate frequency quadrature downconverter. In paragraph 2 of the Office Action the Examiner suggests that blocks 5 and 7 in Figure 1 of Limberg constitute a zero intermediate frequency quadrature downconverter. The tuner of Limberg, however, is of the triple conversion type with entirely independent frequency converters 3, 5, and 7. The first converter 3 is an upconverter which, as described in the paragraph beginning at column 5 line 22 of Limberg converts the desired channel to a relatively high UHF intermediate frequency. The second converter 5 is a downconverter which converts the high first intermediate frequency to a second lower intermediate frequency in the VHF range. The VHF intermediate frequency signal is then converted to baseband by the "sycrodyne to baseband circuitry 7." The converters 5 and 7 are thus entirely independent of each other and cannot possibly be considered a zero intermediate quadrature downconverter. Accordingly, Applicant respectfully submits that the combination of Limberg and Waight fails to disclose a zero intermediate frequency quadrature downconverter as required by claim 1 and that the Examiner's rejection is improper for at least this reason.

Independent claim 1 has been amended to insert the features of the origininally filed claim 3 so that claim 1 now recites a tuner comprising an upconverter followed by a zero intermediate frequency quandrature downconverter with the upconverter being substantially fixed and the downconverter being variable for selecting a desired channel. With respect to original claim 3, which has now been cancelled, the Examiner goes on to state that "Limberg discloses that said converter is an upconverter and said downconverter is a downconverter for selecting a desired channel (see Figure 1)." This is entirely contrary to the disclosure of Limberg. The only

disclosure in Limberg of how tuning is performed is given in the paragraph beginning at column 5 line 22. In particular, at column 5 line 33 of Limberg it is clearly stated that "The RF amplifier 2 and the upconverter 3 have adjustable tuning and together function as a tuner for selecting a digital television signal from one of the channels at different locations in a frequency band allocated for television broadcasting." Thus, Limberg is exclusively concerned with a tuner having a variable upconverter for selecting a desired channel and a fixed downconverter.

Similarly, Waight is concerned exclusively with a variable upconverter for selecting a desired channel and a substantially fixed downconverter. This is clearly described in column 3 of Waight and particularly at the passage beginning at column 3 line 25 which states that the upconverter local oscillator frequency "is selected to translate the desired input channel to correspond to the passband of bandpass filter 33. The passband of the filter should generally be three times the bandwidth of the channel being selected." Thus, tuning is exclusively performed in the upconverter in Waight. Although the local oscillators of the upconverter and the downconverter are both variable, the variation in frequency of which the downconverter local oscillator is capable is relatively limited in order to avoid interference from local oscillator heterodyning and is certainly not sufficient to perform any channel selection whatever.

The feature recited in original claim 3 and amended claim 1 that the upconverter is a substantially fixed upconverter and the downconverter is a variable downconverter for selecting a desired channel is therefore not disclosed in Limberg or Waight and is not disclosed in any of the prior art of which Applicant is aware. For at least this additional reason Applicant respectfully submits that the Examiner's rejection to claim 1 has been overcome.

In addition to the advantages set out in the application as filed the substantially fixed upconverter and the variable downconverter for channel section have further technical advantages. In particular, where it is desired to receive two or more channels independently of each other and simultaneously from a single connection point, such as a single antenna or a single cable feed, it was previously necessary to provide a power splitter dividing the power from the single feed to two or more totatlly independent tuners. This resulted in a reduction in noise

performance because of power sharing of the input power between the two or more tuners and losses within the power splitter. Also, this arrangement was more expensive because the complete tuner function had to be multiplicated by the number of channels which it was desired to receive independently of each other at the same time.

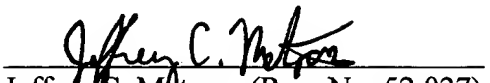
The arrangement defined in claim 1, as amended, overcomes these problems. In particular, the use of a substantially fixed upconverter allows a single connection to an input signal feed without requiring the use of any power splitting arrangement. The noise performance may therefore be improved. Also, the use of a fixed upconverter allows several variable down converters to be connected to the output of the single upconverter so that several channels may be received independently of each other and simultaneously without requiring complete multiplication of the turner circuitry. In particular, a single upconverter serves all down converters with a consequent reduction in cost.

For at least the reasons given above, Applicant respectfully submits that claim 1, as amended, is patentable over the prior art. Moreover, all other pending claims depend from independent claim 1 and thus are patentable for at least the same reasons stated above with respect to claim 1.

Submitted herewith is an information disclosure statement attaching art identified in the European search report.

In light of the foregoing, Applicant respectfully requests that a timely Notice of Allowance be issued in this case. The Commissioner is hereby authorized to charge any additional fees which may be required by this paper, or to credit any overpayment to Deposit Account 20-0809. Prompt and favorable examination is requested.

Respectfully submitted,



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Date: March 4, 2005

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